Genetic Factors Found to Regulate Embryonic Stem Cell Maturation

Posted: March 20, 2007

Created: 20/03/2007 - 10:14

Researchers at UC, San Francisco identified a molecule that regulates differentiation of embryonic stem cells. In some cases, small molecules of the genetic material RNA have the ability to turn genes on and off rather than carrying out the normal RNA function of coding for proteins. These small RNAs, called micro RNA or miRNA, are thought to be one way the cell regulates genes that control how stem cells differentiate into mature cell types. In this study, the researchers created genetically altered mouse embryonic stem cells that lack the miRNA DGCR8. These cells did not respond properly to signals that would normally cause stem cells to differentiate into mature cell types. Even after the cells began differentiating they continued making proteins that are normally only found in embryonic stem cells. This work shows that miRNAs are key molecules to target for controlling ES cell differentiation, which is essential for developing safe protocols for stem cell-based therapies.

Nature Genetics: March, 2007
CIRM funding: Yanging Wang (T1-00002)

Related Information: UCSF Institute for Regeneration Medicine

Tags: Control of Stem Cell Fate, Training, Wang, University of California San Francisco